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10/663,079	09/16/2003	Alan Buckley	7631-110U1 (P5430USA)	2434

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EXAMINER	
WILKINS III, HARRY D	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,079	BUCKLEY ET AL.	
	Examiner	Art Unit	
	Harry D. Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *25-30 and 36-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24 and 31-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/633,665.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Means-Plus-Function Language

1. Applicant has disputed the interpretation of the "means for" language of claim 1, specifically that the "means for passing a saline solution having a substantially constant chloride ion concentration through the cell" requires control of salinity and flow rate and points to the specification at page 7, lines 22-25 for support.

2. However, the specification states that the control of both the salinity and the flow rate are only done when "a constant chloride ion throughput" was desired, and not for controlling the concentration of chloride ions. Thus, Applicant's claim language continues to be interpreted as set forth by the Examiner previously.

Claim Objections

3. The objection to claim 1 has been withdrawn in view of Applicant's correction of the typographical error.

Claim Rejections - 35 USC § 112

4. The rejection of claim 34 has been withdrawn in view of Applicant's correction of the claim dependency.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 31 is rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al (US 4,432,856).

Murakami et al anticipate the invention as claimed. Murakami et al teach (see figure 1) an apparatus for electrochemically treating a supply of aqueous salt solution (25) including a divided electrolytic cell having anode and cathode chamber, each having an anode or cathode, respectively, and input and output lines wherein the input line to the cathode chamber was provided with a flow regulator (22), the anode and cathode were connected to a source of direct current (inherently capable of operation at constant current) and an output line from the cathode chamber was connected to an input line of the anode chamber by way of a recirculation line.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3, 5-6, 8-16 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691).

Yamaguti et al teach (see figure 2) an apparatus for producing an output solution including an electrolytic cell (1), means for creating a solution of constant chloride ion concentration and passing it to the electrolytic cell (109), means for dispensing the

output solution from the cell (115a). Yamaguti et al teach a power supply 23 for applying current across the anode and cathode to perform the reaction.

However, Yamaguti et al fail to teach that the power supply was capable of operating at constant current.

Broun, Jr et al teach (see col. 6) operation of an electrolytic cell to produce free chlorine in a cathode stream, where constant current was utilized.

Therefore, it would have been obvious to one of ordinary skill in the art to have applied the constant current source of Broun, Jr et al to the apparatus of Yamaguti et al because operation at a constant current would have provided a constant rate of production of products. One of ordinary skill in the art of electrolysis was aware that the rate of reaction in an electrolysis reaction was directly proportional to the current flowing according to Faraday's Law of Electrolysis.

Regarding claim 2, Yamaguti et al teach (see figure 2) that the electrolytic cell included anode and cathode chambers separated by a membrane, each chamber having a feed line through which the saline solution is fed into the chamber and output anolyte and catholyte lines.

Regarding claim 3, each of the anolyte and catholyte are considered to be output solutions.

Regarding claim 5, Yamaguti et al teach (see figure 2) a concentrated salt solution make up tank and mixing means 109a, 109b and 109c for mixing the concentrated salt solution with the process water. It would have been obvious to one of

ordinary skill in the art to have added a process water tank for the purpose of providing a buffer of water to be treated to ensure constant operation.

Regarding claim 6, the mixing means included a dispenser (pump 109b) for dispersing pulses of concentrated salt solution into the continuous flow of process water.

Regarding claim 8, the electrolytic cell of Yamaguti et al is positioned "above" the concentrated salt solution make up tank and the process water inlet.

Regarding claim 9, the apparatus of Yamaguti et al included an intermediate tank 21 for receiving the anolyte output solution.

Regarding claims 10 and 11, the apparatus of Yamaguti et al included measuring means 117a and 117b for measuring the electrical conductivity and the redox potential. Since Yamaguti et al teach a desire (see col. 3, lines 50-56) to be able to control the pH of the output solution, it would have been obvious to one of ordinary skill in the art to have added an additional detector for determining the pH of the output solution to ensure it was within desired ranges.

Regarding claim 12, it would have been obvious to one of ordinary skill in the art to have added a storage tank for storing and/or transporting the output solution to provide a buffer amount of solution on hand in case of emergency.

Regarding claim 13, the intermediate tank 21 of Yamaguti et al is considered to be a "weir tank" since it had an open top. It would have been obvious to have placed the storage tank below the intermediate tank to catch any overflow of output solution.

Regarding claim 14, it would have been obvious to have placed the storage tank such that the output solution could have been fed to a user by means of gravity to reduce reliance on electricity required to run a pump.

Regarding claims 15 and 16, it would have been obvious to have added a rinse water storage tank for mixing the output solution with water to provide mixing of the water with the biocidal output solution to provide a treated water for use. It would have been obvious to have placed the rinse water storage tank such that the treated water could have been fed to a user by means of gravity to reduce reliance on electricity required to run a pump.

Regarding claims 18-23, the apparatus of Yamaguti et al included a user interface 25c and 25d for displaying information on the performance of the apparatus and materials inputted to and outputted from the apparatus and a control CPU for adjustment of operating parameters. It would have been obvious to have utilized a conventional keypad for inputting parameters and to have added a remote control station to allow control and monitoring of the apparatus from a remote location.

Regarding claim 24, it would have been obvious to one of ordinary skill in the art to have utilized the signal from the redox meter 117b to provide a failsafe mechanism whereby if the output solution lacked sufficient biocidal properties then the output solution would have not been dispensed thereby ensuring that the produced rinse water provided the required amount of sterilization.

9. Claims 4 and 31-35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 3 above, and further in view of Murakami et al (US 4,432,856).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach a catholyte recirculation line for feeding at least a portion of catholyte form the cathode chamber to the input line of the anode chamber.

Murakami et al teach (see figure 1 and cols. 5 and 6) that the product produced and the pH of the product can be controlled by adjusting the pH of the input anolyte by way of recirculating a portion of the catholyte to the input anolyte to control the pH.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a catholyte recirculation line to the apparatus of Yamaguti et al as suggested by Murakami et al for the purpose of providing additional control of the pH of the anolyte output solution.

Regarding claim 31, Yamaguti et al teach the divided electrolytic cell, the flow regulator on the cathode chamber input line, and Broun, Jr et al suggest the constant direct current power source. Murakami et al suggest the recirculation line for controlling the pH.

Regarding claim 32, since Yamaguti et al teach a desire (see col. 3, lines 50-56) to be able to control the pH of the output solution, it would have been obvious to one of ordinary skill in the art to have added an additional detector for determining the pH of the output solution to ensure it was within desired ranges.

Regarding claims 33 and 34, Murakami et al suggest control of the pH of the output anolyte by feeding a portion of the catholyte into the input line of the anode chamber. Thus, it would have been obvious to one of ordinary skill in the art to have provided a pump for moving the catholyte into the input line and to have controlled the amount of catholyte flowed by the pump by utilizing the pH meter of Yamaguti et al in order to have utilized a conventional feedback control loop for controlling the pH of the anolyte in the output line.

Regarding claim 35, it would have been obvious to one of ordinary skill in the art to have provided a degassing unit in the recirculation line to have prevented any hydrogen gas produced at the cathode and dissolved in the catholyte from being transferred into the input line of the anode chamber.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 6 above, and further in view of Howard (US 5,026,946).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach that the dispenser was a tube having a closed end, an open, free end and a plurality of holes along its length.

Howard teaches (see figures) a dispenser for mixing of two fluid streams wherein the dispenser was an elongate tube having a closed end, an open, free end and a plurality of holes along its length to provide adequate mixing.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the dispenser of Howard for the "Injector" of Yamaguti et al because the dispenser of Howard provided adequate mixing of two fluid streams.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 3 above, and further in view of Malchesky (US 5,932,171).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach corrosion inhibitor storage and dispensing means for dosing corrosion inhibitor into the intermediate holding tank.

Malchesky teaches (see col. 4) that electrolyzed water to be used for sterilization should be treated with corrosion inhibiting additives to prevent the devices to be sterilized from being subjected to corrosion.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a conventional storage (i.e.-tank) and dispensing (i.e.-pump) means for dosing the corrosion inhibitor into the output solution.

Response to Arguments

12. Applicant's arguments filed 18 September 2006 have been fully considered but they are not persuasive. Applicant has argued that:

a. Murakami et al cannot anticipate claim 31 since Murakami et al fail to teach a flow regulator and the structure cite by the Examiner (22) is not a flow regulator.

In response, the tank (22) cited by the Examiner operates as a flow regulator since it contained an orifice at its bottom for connection to an output line (23). The orifice operated to limit the flow rate leaving the tank (22), therefore, the apparatus of Murakami et al included a flow regulator as claimed.

b. The present claims require means for controlling salinity by controlling concentration and flow rate and that there is not mention in Yamaguti et al of such methodology.

In response, Applicant is reminded that the current pending claims are apparatus claims, and, as per MPEP 2114, are defined by the structure claimed, not by how they operate. The structure (109) of Yamaguti et al was capable of creating a constant concentration solution to be fed to the electrolytic cell. Further, as noted above, the claims do not require a constant chloride ion throughput as discussed in the specification, merely a constant chloride ion concentration solution. Applicant has failed to structurally distinguish the claimed invention from the structure of the prior art.

c. Yamaguti et al do not teach an intermediate storage tank as claimed in claim 9.

In response, a tank is a tank. Regardless of what Applicant titles the tank, Applicant is claiming a tank to receive output solution. Yamaguti et al teach such a tank for receiving output solution.

d. There is no motivation to combine the teachings of Yamaguti et al with the teachings of Murakami et al (for claims 4 and 31-35.

In response, it would have been obvious to one of ordinary skill in the art to have added a catholyte recirculation line to the apparatus of Yamaguti et al as suggested by Murakami et al for the purpose of providing additional control of the pH of the anolyte output solution.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw